

IN THE SPECIFICATION:

On page 1 after the title, please insert the following:

RELATED APPLICATIONS

The present application is a continuation of U.S. Patent Application No. 10/121,650 filed April 15, 2002, the disclosure of which is hereby incorporated by reference herein in its entirety.

Please amend the paragraph on page 2, beginning at line 13 as follows:

To achieve the above listed and other objects, the package substrate of the present invention is provided with a plurality of first contact pads ~~linked in a first daisy chain pattern~~, and the test board of the present invention has a plurality of second contact pads ~~linked in a second daisy chain pattern~~ and a plurality of test pads wherein all of the second contact pads are divided into a plurality of groups each connected to one pair of test pads, and all of the second contact pads in ~~[[any]]~~ the same group are arranged in a line.

Please amend the paragraph on page 3, beginning at line 15 as follows:

In the IC package testing method according to the present invention, the IC package (not shown) has a package substrate 200 (see FIG. 2) specially designed for solder joint reliability test. The package substrate 200 is of the same size and shape as the substrates for mass production. The package substrate 200 is provided with a plurality of first contact pads 210 ~~linked in a first daisy chain pattern~~. The package substrate 200 is a ball grid array (BGA) substrate.

Please amend the paragraph on page 3, beginning at line 21 as follows:

The test board 300 according to one embodiment of the present invention, shown in FIG. 3, includes a plurality of second contact pads 310 as denoted with A1 to U21 in FIG. 3 and a plurality of test pads such as test pads N to N5 in FIG. 3. All of the contact pads 310 are linked in a second daisy chain pattern and divided into a plurality of groups each connected to one pair

of test pads wherein all of the second contact pads 310 in ~~[[any]]~~ the same group are arranged in a line. For example, the contact pads A1 to U1 are belonged to the same group (hereinafter referred to as "GROUP I"), connected to the test pads N and W5. As described below, the contact pads 310 are designed to be connected to the solder bumps provided on an IC package to be tested.

Please amend the paragraph on page 4, beginning at line 24 as follows:

It is noted that, in the test board 300 according to one preferred embodiment of the present invention, all of the second contact pads in ~~[[any]]~~ the same group are arranged in a line. Since the grinding operation must be conducted from outer rows to inner rows, the time for conducting the SEM failure analysis is significantly reduced when the package substrate and the test board of the present invention are used.

On page 2, after line 18, please insert the following paragraph:

The first contact pads of the package substrate are adapted for receiving solder bumps. Selected pairs of the first contact pads are connected together to form a first daisy chain portion. Selected pairs of the second contact pads are connected together to form a second daisy chain portion. When the integrated circuit package is mounted on the test board with each solder bump soldered to a corresponding contact pad, all of the pairs of connected second contact pads and corresponding pairs of connected first contact pads form a conductive path (i.e., the "daisy chain") that passes through all of the solder bumps therebetween.

Please amend the paragraph on page 2, beginning at line 23 as follows:

~~—Since the first daisy chain pattern is complementary to the second daisy chain pattern, all of the second contact pads in any group are in a series electrical connection to one another through the first and second daisy chain patterns. In step (b), all of the second contact pads in any group form a closed circuit when the corresponding pair of test pads is probed. In step (b), each group of connected second contact pads and corresponding connected first contact pads form a closed circuit through all of the solder bumps therebetween when a corresponding pair of test~~

pads are probed. Furthermore, the test board includes a pair of major test pads such that all of the second contact pads form a closed circuit when the pair of major test pads is probed.

On page 3, after line 20, please insert the following paragraph:

The first contact pads 210 of the package substrate 200 are adapted for receiving solder bumps (not shown). Selected pairs of contact pads 210 are respectively connected by conductors (illustrated as bold lines in FIG. 2) to form a first (upper) half of a daisy chain (hereinafter referred to as "the first daisy chain portion").

On page 3, after line 28, please insert the following paragraph:

Selected pairs of second contact pads 310 are respectively connected by conductors (illustrated as bold lines in FIG. 3) to form a second (lower) half of a daisy chain (hereinafter referred to as "the second daisy chain portion").

Please amend the paragraph on page 4, beginning at line 7 as follows:

Then, after conducting the mounting step, the probes of an ohmmeter are connected to the test pads 320 of the test board 300, and an electrical test is performed to determine whether the electrical connections are complete. ~~Since the first daisy chain pattern is complementary to the second daisy chain pattern, all of the second contact pads 310 in any group are in a series electrical connection to one another through the first and second daisy chain patterns when the package substrate 200 is mounted on the test board 300.~~ When the IC package is mounted on the test board, all of the pairs of connected second contact pads 310 and corresponding pairs of connected first contact pads 210 form a conductive path (i.e., the "daisy chain") that passes through all of the solder bumps (not shown) therebetween. When one pair of the test pads 320, e.g., the test pads N/W5 shown in FIG. 3, is probed, ~~all of the second contact pads 310, i.e., the contact pads A1 to U1, in the corresponding group connected to the test pads N/W5 form a~~

~~closed circuit.~~ all of connected second contact pads 310 in the same group connected to the test pads N/W5, i.e., GROUP I, and corresponding first contact pads 210 form a closed circuit through all of the solder bumps (not shown). Therefore, when the measured resistance of the major test pads S and E is larger than a predetermined value, it means that at least one solder joint fails the test. In this situation, every pair of test pads (such as N/W5, N1/W4..... illustrated in FIG. 4) will be probed to measure their resistance so as to find out which group of solder joints fails in the test.